FIG. 1A

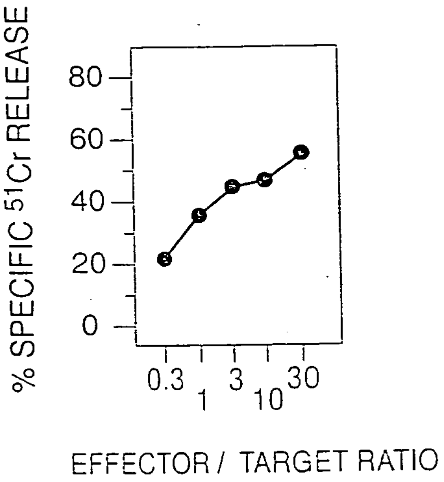


FIG. 1B

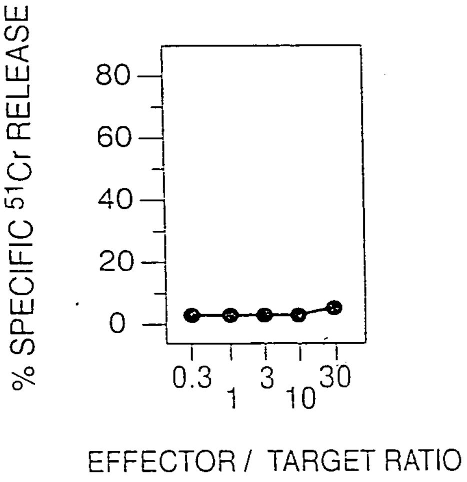


FIG. 1C

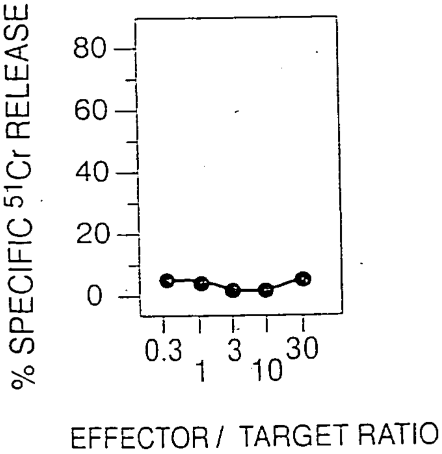


FIG. 1D

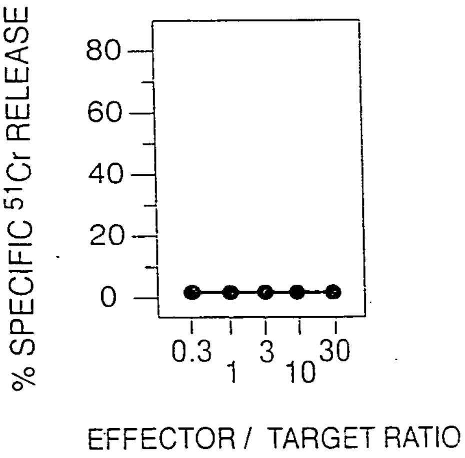


FIG. 2

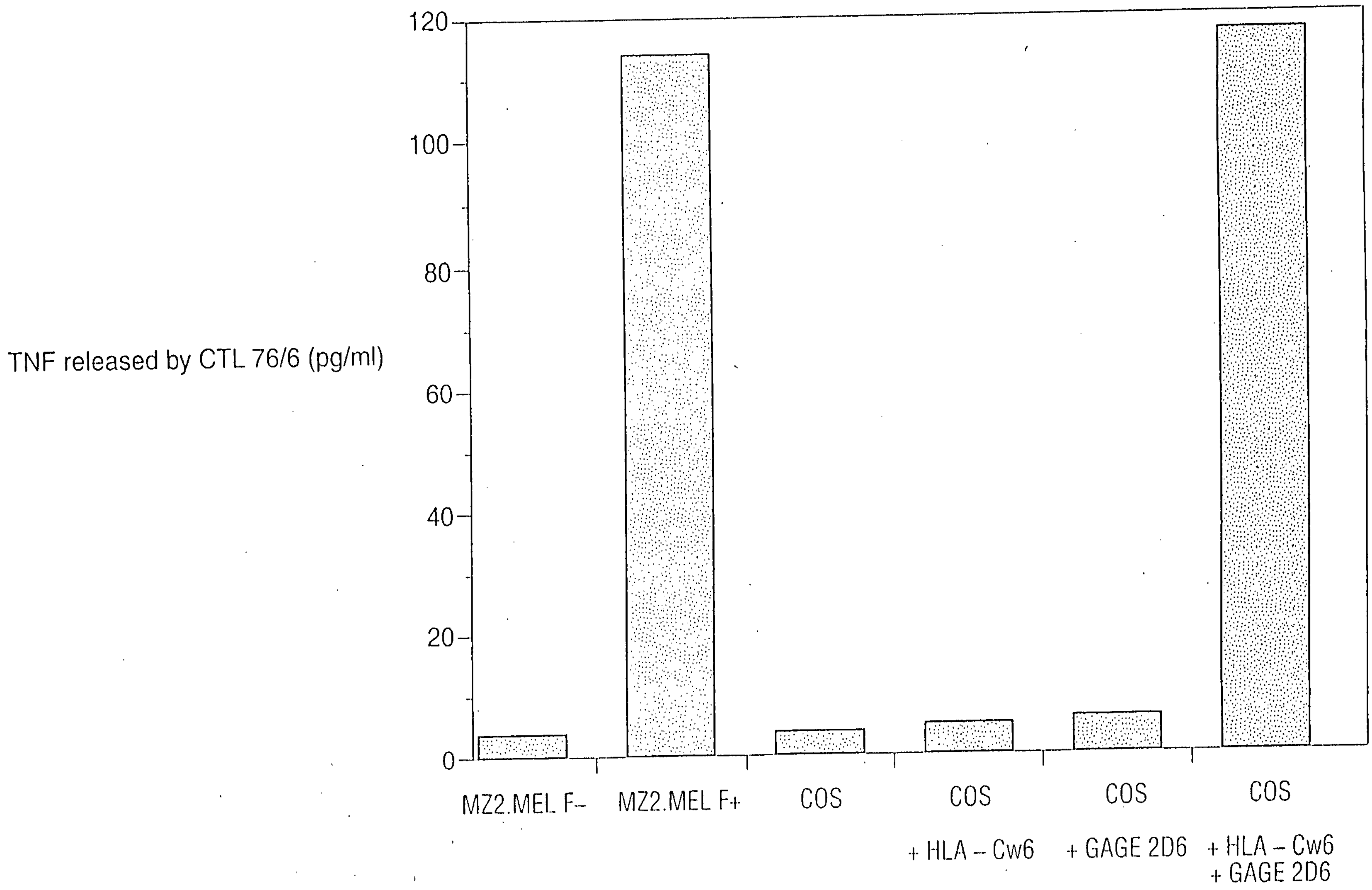

TNF released by CTL 76/6 (pg/ml)
120
100
80
60
40
20
0
MZ2.MEL F–
MZ2.MEL F+
COS
COS + HLA – Cw6
COS + GAGE 2D6
COS + HLA – Cw6 + GAGE 2D6

FIG.3

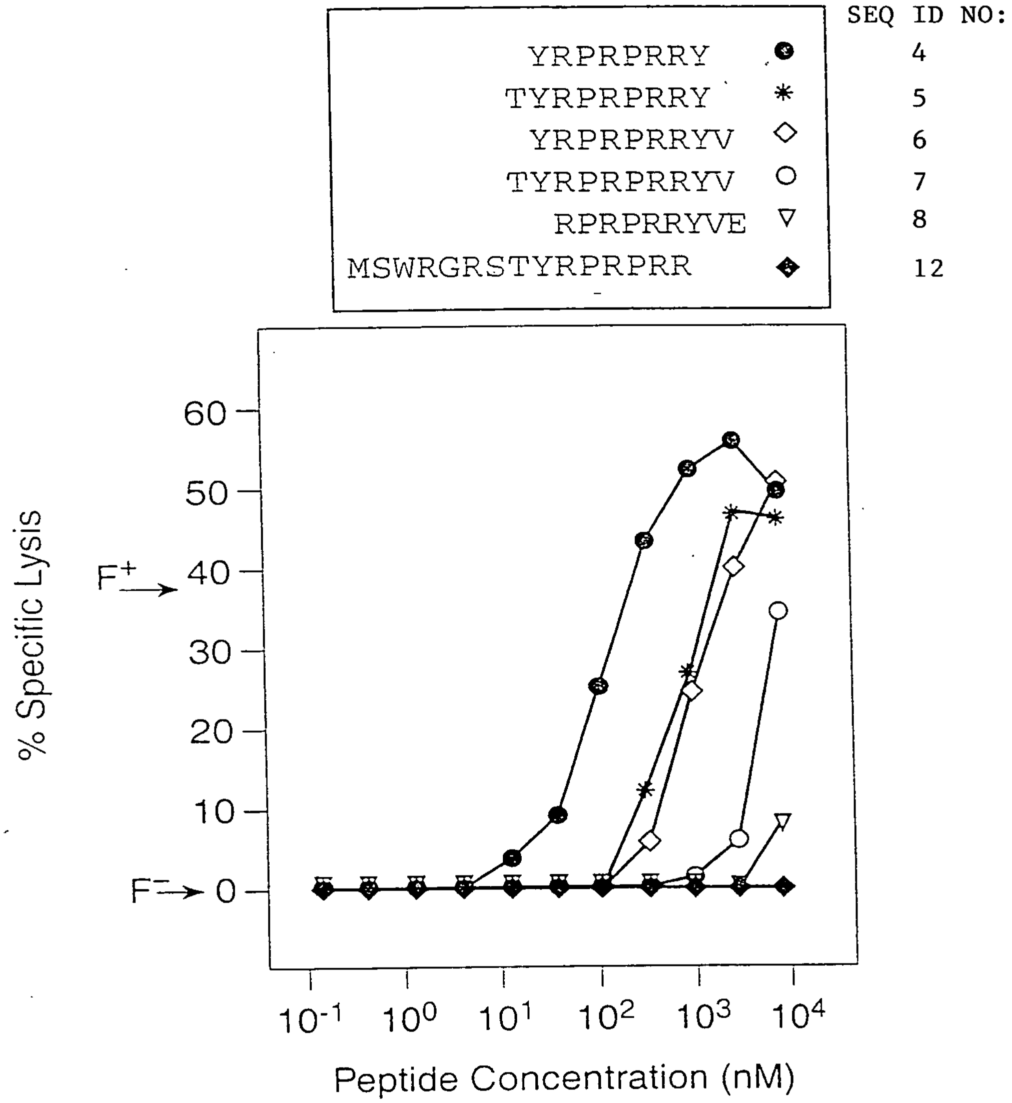
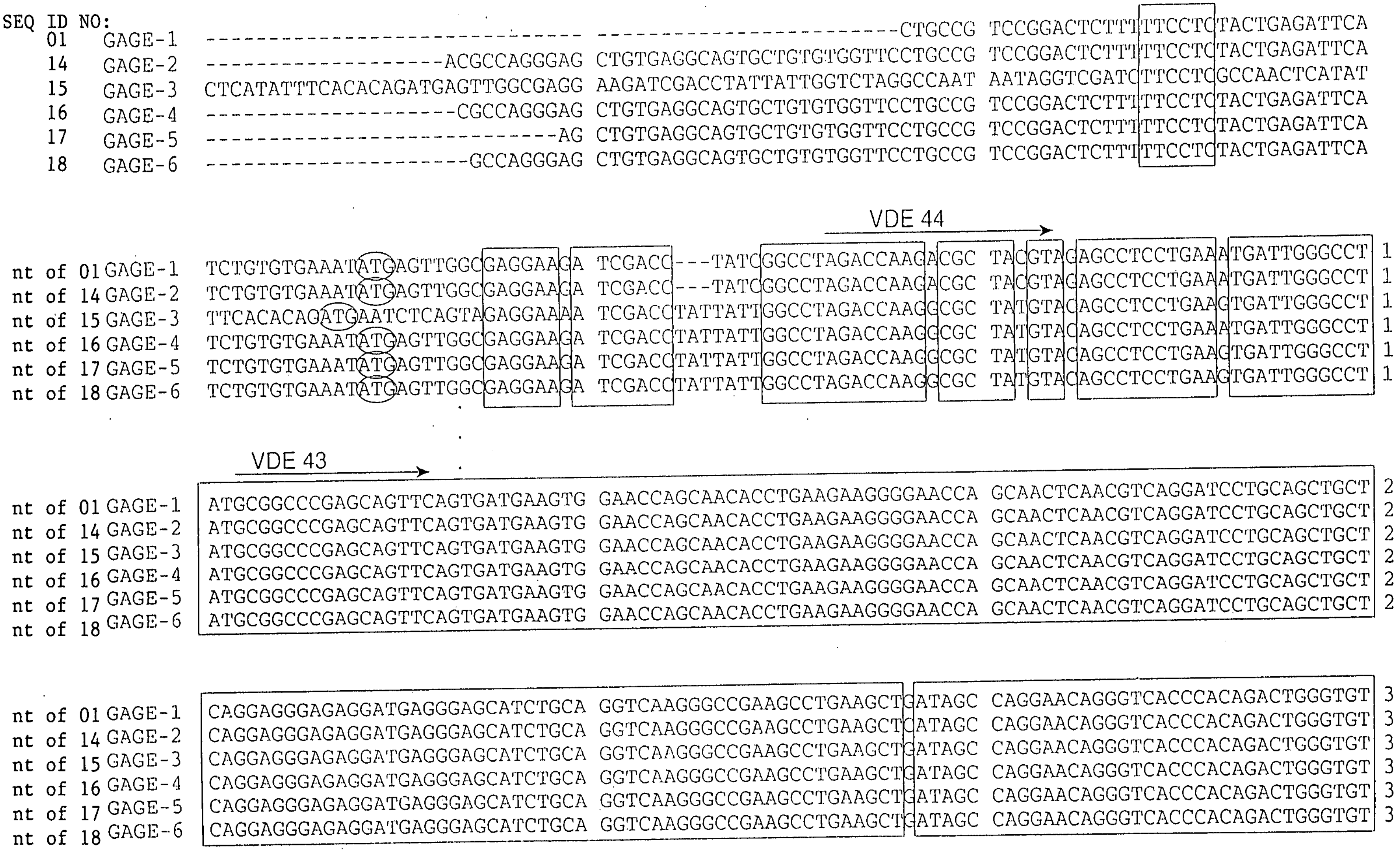

SEQ ID NO:
YRPRPRRY ● 4
TYRPRPRRY ✱ 5
YRPRPRRYV ◇ 6
TYRPRPRRYV ○ 7
RPRPRRYVE ▽ 8
MSWRGRSTYRPRPRR ◆ 12
% Specific Lysis
60
50
40
30
20
10
0
F+
F−
10^{-1}
10^{0}
10^{1}
10^{2}
10^{3}
10^{4}
Peptide Concentration (nM)

FIG. 4A



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SEQ ID NO:
 01   GAGE-1   ---------------------------- -----------------------CTGCCG TCCGGACTCTTTTTCCTCTACTGAGATTCA
 14   GAGE-2   -------------------ACGCCAGGGAG CTGTGAGGCAGTGCTGTGTGGTTCCTGCCG TCCGGACTCTTTTTCCTCTACTGAGATTCA
 15   GAGE-3   CTCATATTTCACACAGATGAGTTGGCGAGG AAGATCGACCTATTATTGGTCTAGGCCAAT AATAGGTCGATCTTCCTCGCCAACTCATAT
 16   GAGE-4   ---------------------CGCCAGGGAG CTGTGAGGCAGTGCTGTGTGGTTCCTGCCG TCCGGACTCTTTTTCCTCTACTGAGATTCA
 17   GAGE-5   ----------------------------AG CTGTGAGGCAGTGCTGTGTGGTTCCTGCCG TCCGGACTCTTTTTCCTCTACTGAGATTCA
 18   GAGE-6   ----------------------GCCAGGGAG CTGTGAGGCAGTGCTGTGTGGTTCCTGCCG TCCGGACTCTTTTTCCTCTACTGAGATTCA

                                                                     VDE 44
nt of 01 GAGE-1   TCTGTGTGAAATATGAGTTGGCGAGGAAGA TCGACC---TATCGGCCTAGACCAAGACGC TACGTAGAGCCTCCTGAAATGATTGGGCCT 1
nt of 14 GAGE-2   TCTGTGTGAAATATGAGTTGGCGAGGAAGA TCGACC---TATCGGCCTAGACCAAGACGC TACGTAGAGCCTCCTGAAATGATTGGGCCT 1
nt of 15 GAGE-3   TTCACACAGATGAATCTCAGTAGAGGAAAA TCGACCTATTATTGGCCTAGACCAAGGCGC TATGTACAGCCTCCTGAAGTGATTGGGCCT 1
nt of 16 GAGE-4   TCTGTGTGAAATATGAGTTGGCGAGGAAGA TCGACCTATTATTGGCCTAGACCAAGGCGC TATGTACAGCCTCCTGAAATGATTGGGCCT 1
nt of 17 GAGE-5   TCTGTGTGAAATATGAGTTGGCGAGGAAGA TCGACCTATTATTGGCCTAGACCAAGGCGC TATGTACAGCCTCCTGAAGTGATTGGGCCT 1
nt of 18 GAGE-6   TCTGTGTGAAATATGAGTTGGCGAGGAAGA TCGACCTATTATTGGCCTAGACCAAGGCGC TATGTACAGCCTCCTGAAGTGATTGGGCCT 1

                  VDE 43
nt of 01 GAGE-1   ATGCGGCCCGAGCAGTTCAGTGATGAAGTG GAACCAGCAACACCTGAAGAAGGGGAACCA GCAACTCAACGTCAGGATCCTGCAGCTGCT 2
nt of 14 GAGE-2   ATGCGGCCCGAGCAGTTCAGTGATGAAGTG GAACCAGCAACACCTGAAGAAGGGGAACCA GCAACTCAACGTCAGGATCCTGCAGCTGCT 2
nt of 15 GAGE-3   ATGCGGCCCGAGCAGTTCAGTGATGAAGTG GAACCAGCAACACCTGAAGAAGGGGAACCA GCAACTCAACGTCAGGATCCTGCAGCTGCT 2
nt of 16 GAGE-4   ATGCGGCCCGAGCAGTTCAGTGATGAAGTG GAACCAGCAACACCTGAAGAAGGGGAACCA GCAACTCAACGTCAGGATCCTGCAGCTGCT 2
nt of 17 GAGE-5   ATGCGGCCCGAGCAGTTCAGTGATGAAGTG GAACCAGCAACACCTGAAGAAGGGGAACCA GCAACTCAACGTCAGGATCCTGCAGCTGCT 2
nt of 18 GAGE-6   ATGCGGCCCGAGCAGTTCAGTGATGAAGTG GAACCAGCAACACCTGAAGAAGGGGAACCA GCAACTCAACGTCAGGATCCTGCAGCTGCT 2

nt of 01 GAGE-1   CAGGAGGGAGAGGATGAGGGAGCATCTGCA GGTCAAGGGCCGAAGCCTGAAGCTGATAGC CAGGAACAGGGTCACCCACAGACTGGGTGT 3
nt of 14 GAGE-2   CAGGAGGGAGAGGATGAGGGAGCATCTGCA GGTCAAGGGCCGAAGCCTGAAGCTGATAGC CAGGAACAGGGTCACCCACAGACTGGGTGT 3
nt of 15 GAGE-3   CAGGAGGGAGAGGATGAGGGAGCATCTGCA GGTCAAGGGCCGAAGCCTGAAGCTGATAGC CAGGAACAGGGTCACCCACAGACTGGGTGT 3
nt of 16 GAGE-4   CAGGAGGGAGAGGATGAGGGAGCATCTGCA GGTCAAGGGCCGAAGCCTGAAGCTGATAGC CAGGAACAGGGTCACCCACAGACTGGGTGT 3
nt of 17 GAGE-5   CAGGAGGGAGAGGATGAGGGAGCATCTGCA GGTCAAGGGCCGAAGCCTGAAGCTGATAGC CAGGAACAGGGTCACCCACAGACTGGGTGT 3
nt of 18 GAGE-6   CAGGAGGGAGAGGATGAGGGAGCATCTGCA GGTCAAGGGCCGAAGCCTGAAGCTGATAGC CAGGAACAGGGTCACCCACAGACTGGGTGT 3
```

FIG. 4B

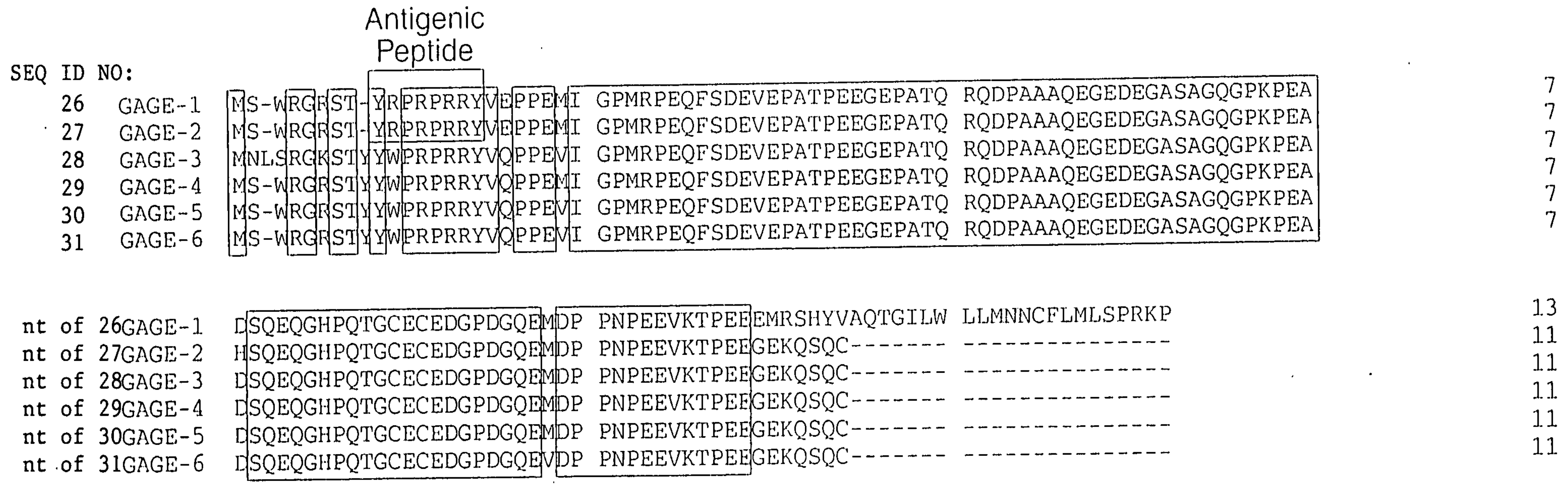
```
                          VDE 24 <------
nt of 01 GAGE-1  GAGTGTGAAGATGGTCCTGATGGGCAGGAG ATGGACCCGCCAAATCCAGAGGAGGTGAAA ACGCCTGAAGAAGAGATGAGGTCTCACTAT 3
nt of 14 GAGE-2  GAGTGTGAAGATGGTCCTGATGGGCAGGAG ATGGACCCGCCAAATCCAGAGGAGGTGAAA ACGCCTGAAGAAG----------------- 4
nt of 15 GAGE-3  GAGTGTGAAGATGGTCCTGATGGGCAGGAG ATGGACCCGCCAAATCCAGAGGAGGTGAAA ACGCCTGAAGAAG----------------- 4
nt of 16 GAGE-4  GAGTGTGAAGATGGTCCTGATGGGCAGGAG ATGGACCCGCCAAATCCAGAGGAGGTGAAA ACGCCTGAAGAAG----------------- 4
nt of 17 GAGE-5  GAGTGTGAAGATGGTCCTGATGGGCAGGAG ATGGACCCGCCAAATCCAGAGGAGGTGAAA ACGCCTGAAGAAG----------------- 4
nt of 18 GAGE-6  GAGTGTGAAGATGGTCCTGATGGGCAGGAG GTGGACCCGCCAAATCCAGAGGAGGTGAAA ACGCCTGAAGAAG----------------- 4

nt of 01 GAGE-1  GTTGCCCAGACTGGGATTCTCTGGCTTTTA ATGAACAATTGCTTCTTAAATCTTTCCCCA CGGAAACCTTGAGTGACTGAAATATCAAAT 4
nt of 14 GAGE-2  ------------------------------ ------------------------------ ------------------------------ 4
nt of 15 GAGE-3  ------------------------------ ------------------------------ ------------------------------ 4
nt of 16 GAGE-4  ------------------------------ ------------------------------ ------------------------------ 4
nt of 17 GAGE-5  ------------------------------ ------------------------------ ------------------------------ 4
nt of 18 GAGE-6  ------------------------------ ------------------------------ ------------------------------

nt of 01 GAGE-1  GGCGAGAGACCGTTTAGTTCCTATCATCTG TGGCATGTGAAGGGCAATCACAGTGTTAAA AGAAGACATGCTGAAATGTTGCAGGCTGCT 5
nt of 14 GAGE-2  ------------------------------ ------GTGAAAAGCAATCACAGTGTTAAA AGAAGACACGTTGAAATGATGCAGGCTGCT 4
nt of 15 GAGE-3  ------------------------------ ------GTGAAAAGCAATCACAGTGTTAAA AGAAGGCACGTTGAAATGATGCAGGCTGCT 4
nt of 16 GAGE-4  ------------------------------ ------GTGAAAAGCAATCACAGTGTTAAA AGAAGGCACGTTGAAATGATGCAGGCTGCT 4
nt of 17 GAGE-5  ------------------------------ ------GTGAAAAGCAATCACAGTGTTAAA AGAAGGCACGTTGAAATGATGCAGGCTGCT 4
nt of 18 GAGE-6  ------------------------------ ------GTGAAAAGCAATCACAGTGTTAAA AGAAGACACGTTGAAATGATGCAGGCTGCT 4

nt of 01 GAGE-1  CCTATGTTGGAAAATTCTTCATTGAAGTTC TCCCAATAAAGCTTTACAGCCTTCTGCAAA GAAAAAAAAAAAA                  6
nt of 14 GAGE-2  CCTATGTTGGAAATTTGTTCATTAAAATTC TCCCAATAAAGCTTTACAGCCTTCTGCAAA GAAAAAAAAAAAA                  5
nt of 15 GAGE-3  CCTATGTTGGAAATTTGTTCATTAAAATTC TCCCAATAAAGCTTTACAGCCTTCTGCAAA GAAAAAAAAAAAA                  5
nt of 16 GAGE-4  CCTATGTTGGAAATTTGTTCATTAAAATTC TCCCAATAAAGCTTTACAGCCTTCTGCAAA AAAAAAAAAAAAA                  5
nt of 17 GAGE-5  CCTATGTTGGAAATTTGTTCATTAAAATTC TCCCAATAAAGCTTTACAGCCTTCTGCAAA GAAAAAAAAAAAA                  5
nt of 18 GAGE-6  CCTATGTTGGAAATTTGTTCATTAAAATTC TCCCAATAAAGCTTTACAGCCTTCTGCAAA AAAAAAAAAAAAA                  5
```

FIG. 5



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SEQ ID NO:
    26    GAGE-1    MS-WRGRST-YRPRPRRYVEPPEMI GPMRPEQFSDEVEPATPEEGEPATQ RQDPAAAQEGEDEGASAGQGPKPEA    7
    27    GAGE-2    MS-WRGRST-YRPRPRRYVEPPEMI GPMRPEQFSDEVEPATPEEGEPATQ RQDPAAAQEGEDEGASAGQGPKPEA    7
    28    GAGE-3    MNLSRGKSTYYWPRPRRYVQPPEVI GPMRPEQFSDEVEPATPEEGEPATQ RQDPAAAQEGEDEGASAGQGPKPEA    7
    29    GAGE-4    MS-WRGRSTYYWPRPRRYVQPPEMI GPMRPEQFSDEVEPATPEEGEPATQ RQDPAAAQEGEDEGASAGQGPKPEA    7
    30    GAGE-5    MS-WRGRSTYYWPRPRRYVQPPEVI GPMRPEQFSDEVEPATPEEGEPATQ RQDPAAAQEGEDEGASAGQGPKPEA    7
    31    GAGE-6    MS-WRGRSTYYWPRPRRYVQPPEVI GPMRPEQFSDEVEPATPEEGEPATQ RQDPAAAQEGEDEGASAGQGPKPEA    7

 nt of 26GAGE-1    DSQEQGHPQTGCECEDGPDGQEMDP PNPEEVKTPEEEMRSHYVAQTGILW LLMNNCFLMLSPRKP    13
 nt of 27GAGE-2    HSQEQGHPQTGCECEDGPDGQEMDP PNPEEVKTPEEGEKQSQC------- ---------------    11
 nt of 28GAGE-3    DSQEQGHPQTGCECEDGPDGQEMDP PNPEEVKTPEEGEKQSQC------- ---------------    11
 nt of 29GAGE-4    DSQEQGHPQTGCECEDGPDGQEMDP PNPEEVKTPEEGEKQSQC------- ---------------    11
 nt of 30GAGE-5    DSQEQGHPQTGCECEDGPDGQEMDP PNPEEVKTPEEGEKQSQC------- ---------------    11
 nt of 31GAGE-6    DSQEQGHPQTGCECEDGPDGQEVDP PNPEEVKTPEEGEKQSQC------- ---------------    11
```

FIG. 6

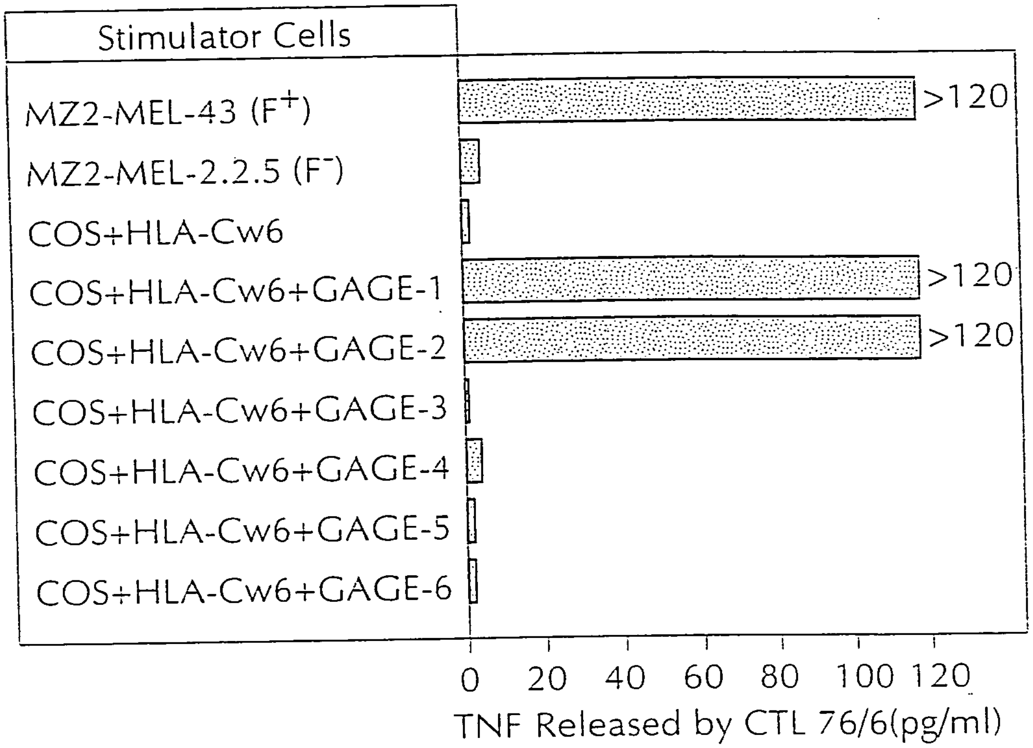

Stimulator Cells
MZ2-MEL-43 (F+)
MZ2-MEL-2.2.5 (F-)
COS+HLA-Cw6
COS+HLA-Cw6+GAGE-1
COS+HLA-Cw6+GAGE-2
COS+HLA-Cw6+GAGE-3
COS+HLA-Cw6+GAGE-4
COS+HLA-Cw6+GAGE-5
COS+HLA-Cw6+GAGE-6
>120
>120
>120
0
20
40
60
80
100
120
TNF Released by CTL 76/6(pg/ml)

FIG. 8

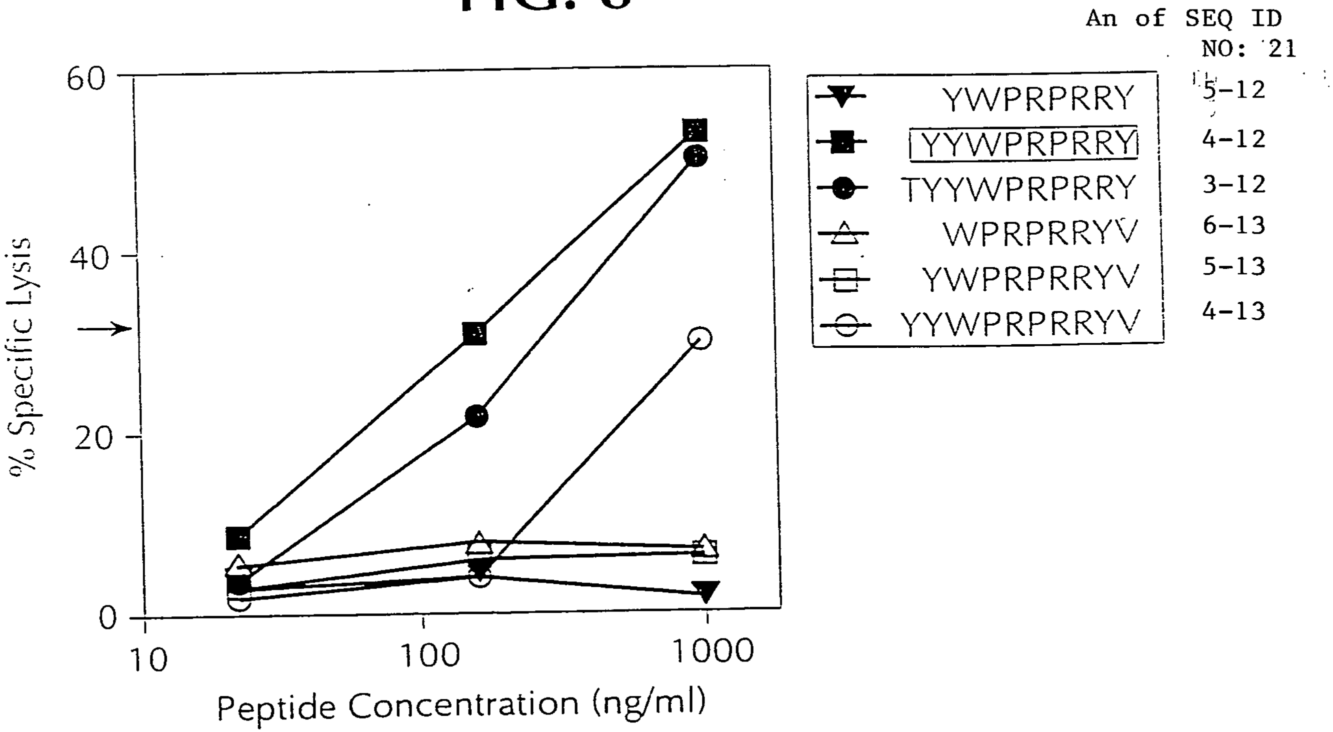
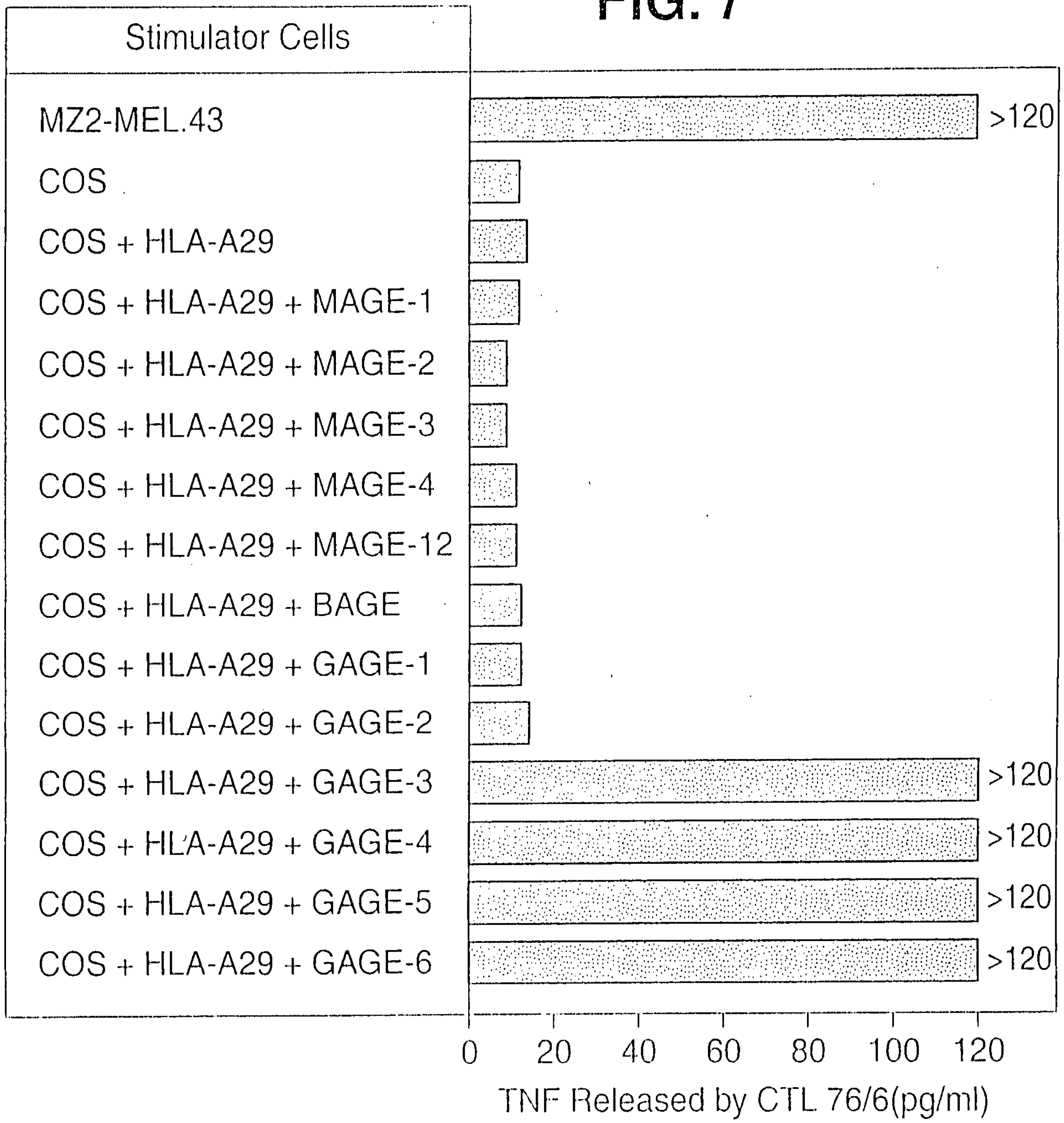

60
40
20
0
% Specific Lysis
10
100
1000
Peptide Concentration (ng/ml)
An of SEQ ID NO: 21
YWPRPRRY 5-12
YYWPRPRRY 4-12
TYYWPRPRRY 3-12
WPRPRRYV 6-13
YWPRPRRYV 5-13
YYWPRPRRYV 4-13

FIG. 7


Stimulator Cells
MZ2-MEL.43
COS
COS + HLA-A29
COS + HLA-A29 + MAGE-1
COS + HLA-A29 + MAGE-2
COS + HLA-A29 + MAGE-3
COS + HLA-A29 + MAGE-4
COS + HLA-A29 + MAGE-12
COS + HLA-A29 + BAGE
COS + HLA-A29 + GAGE-1
COS + HLA-A29 + GAGE-2
COS + HLA-A29 + GAGE-3
COS + HLA-A29 + GAGE-4
COS + HLA-A29 + GAGE-5
COS + HLA-A29 + GAGE-6
>120
>120
>120
>120
>120
0
20
40
60
80
100
120
TNF Released by CTL 76/6(pg/ml)